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**Indonesian Leading Indicators:
Keeping Tabs on the Economy**

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Summary

Data on Indonesian overall economic activity are typically reported from six to 18 months after the fact -- a situation that handicaps current analysis. To help overcome this problem, we have developed an index of economic indicators that uses more timely reported data on money supply, prices, oil exports, import deposits, the government budget, and OECD industrial production. We judge that these indicators provide advance warning of turning points in the economy well before official data on national income and output are published.

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Our most recent analysis of these indicators verifies the conventional notion that the dramatic fall in oil prices and export revenues has sent the economy into a tailspin. Based on the indicators, we believe growth in the first half of the year fell to about 1.5 percent. The indicators further suggest that there will be zero or negative growth for the year, compared with an estimated 3.5 percent in 1985.

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Tracking a Moving Target

Tracking movements in the Indonesian economy on anything less than a yearly basis is handicapped by a paucity of reliable and comprehensive data. Balance of payments data, for example, are typically subject to lags of from six to 12 months, while national income data are often 18 months old by the time they are released. Moreover, these data are subject to numerous -- and often radical -- revisions, limiting the ability of analysts to assess the impact of economic performance on political and social problems and international economic relations. For Indonesia, keeping tabs on economic developments is particularly important as parliamentary and presidential elections draw closer and as Jakarta struggles with massive urban unemployment. []

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The CIA Index

To resolve this difficulty and help improve our current analysis of the economy, we have devised an index of leading economic indicators. We selected for analysis seven economic variables -- all of which are reported monthly -- that directly or indirectly reflect the ups and downs of the Indonesian economy (see Table 1). The resulting composite index is patterned after one we devised for the Philippines, which has proved useful in alerting analysts to near-term changes in overall economic activity and giving them a leg up on the possible political and social effects of economic performance and government economic policies. []

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The Components of the Index

The Indonesian economy is dominated by public sector expenditures -- directly through state enterprises and indirectly through multiplier effects on the private sector -- which are funded primarily by oil tax revenues. In constructing a composite index of overall economic activity, we chose to focus on seven measures that capture, either directly or by proxy, the outward looking, export character of the economy. Current or anticipated changes in Indonesia's overall economic performance are reflected in data on oil exports, government revenues and expenditures, and industrial country demand for Indonesia's exports. Even the money supply is sensitive to changes in the country's external accounts, since it is directly influenced by changes in international reserves, which reflect developments in the current and capital accounts. Indeed, to the extent that the monetary authorities do not "sterilize" capital movements, these flows are reflected in the general price level as well. To a lesser degree, the economy is influenced by purely indigenous sectors, such as agriculture and private nonoil manufacturing, but we lack adequate and timely data on the "real time" performance of these sectors. []

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Table 1**Indonesian Economic Indicators: Components of the Index**

<u>Indicator</u>	<u>Relation to National Output</u>
Money Supply	Represents currency, demand, and time deposits. An increase in the money supply accompanies an increase in economic activity.
Consumer Price Inflation	Price changes reflect the balance between spending and production. As economic activity increases, prices of goods, services, and wages are bid up.
Oil Exports	Oil exports, which account for 60 percent of total exports and 70 percent of government revenues, account for about 30 percent of GDP.
Import Deposits	Import guarantees act as a proxy for total imports and reflects the demand for productive inputs and consumption goods.
Government Revenues	Public revenue reflects domestic sales and exports, as well as personal and corporate income. Revenue increases reflect an increase in economic activity.
Government Expenditures	The economy is dominated by public sector expenditures which are funded primarily by oil tax revenues -- directly through state corporations and indirectly through multiplier effects in the private economy.
OECD Industrial Production	The economy is export driven. An increase in overseas industrial production translates into an increase in demand for Indonesian goods and services.

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What the Index Tells Us

Several statistical procedures lead us to believe that the composite index of economic indicators can usefully anticipate turns in the Indonesian economy in advance of official data (see appendix for methodology). The lack of all but annual official data on national income and product means that we cannot confirm directly the month-to-month accuracy of our composite index, or assess whether it, or any other suitable indicators, are leading, lagging, or concurrent.

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Utilizing data available through April 1986, our index nevertheless confirms the expected dramatic decline in economic activity following the collapse of oil prices in February and March. This is illustrated in Figures 1 and 2, which depict the path of our composite indicator -- showing annualized monthly growth rates -- and the path of Indonesian oil prices, respectively. Since January the drop in the price of Indonesian crude is strongly correlated with the decline of our composite index.

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Indonesian economic activity for the rest of this year (and well into the foreseeable future) will continue to be dominated by the price of oil, given the fact that Indonesia's production capacity will remain essentially fixed at 1.5 million b/d. Without a dramatic increase in oil prices, therefore, we do not expect a significant recovery in economic activity. The latest OPEC agreement on production and quotas -- which expires this November -- provides some encouragement that world oil prices might firm to around \$16 per barrel in the coming months. This could, according to our index, cause a rebound in economic activity to around 2.5 percent annually -- still well below the 5-6 percent growth the World Bank considers necessary to employ an estimated two million new entrants into the labor force yearly. We are not convinced, however, that this agreement will be any more successful than previous efforts to control production.

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We believe that unless oil prices firm to their 1985 level of \$25-26 per barrel, Indonesia's short-term economic and financial difficulties will persist.* Even if oil prices firm to \$16 dollars per barrel under the latest OPEC production arrangement, tax revenues will fall far short of the \$16 billion earned in 1985. This, coupled with the government's reduced access to overseas financing and its own resistance to deficit financing to spur domestic economic activity, suggest that the current economic recession is a long-term problem.

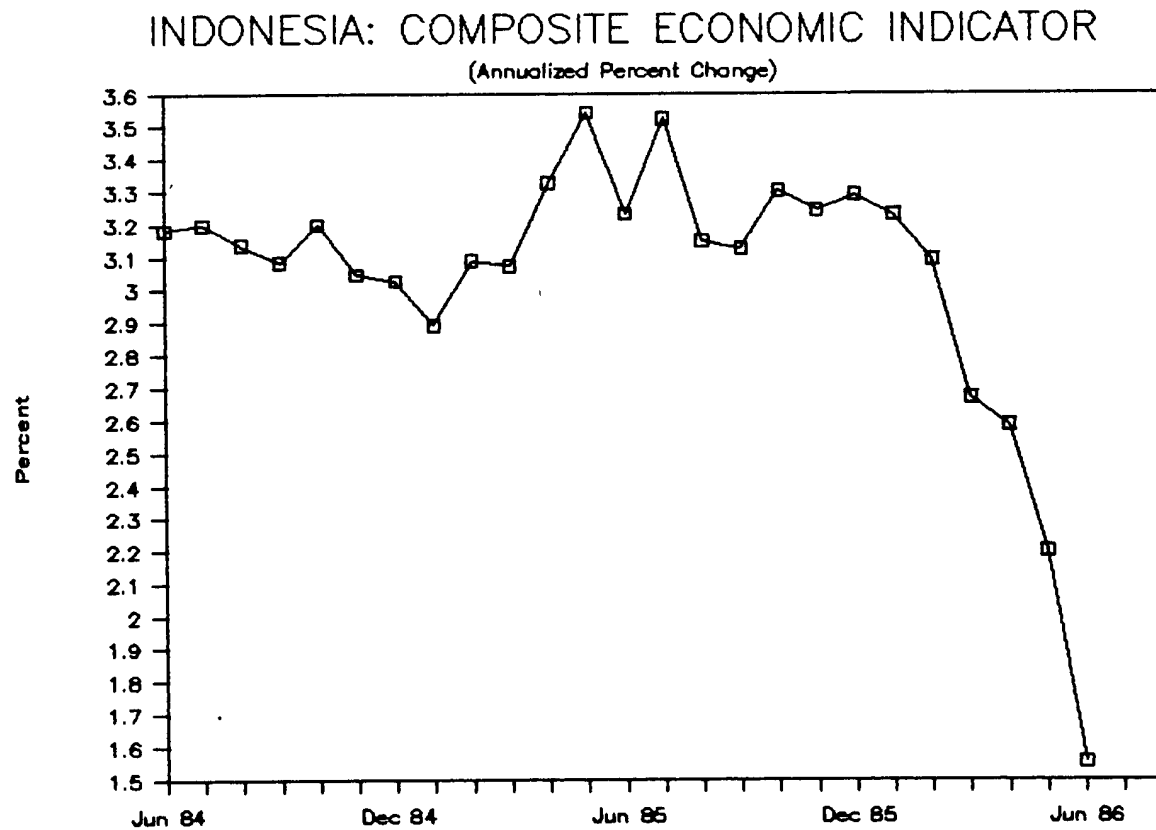
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*This analysis is based on the CIA econometric model of the Indonesian economy.

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FIGURE 1



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Appendix

Economic Indicators: Methodology

An index of economic indicators monitors the timing of business fluctuations, determining when the balance of the individual indicators signals a turn from overall economic contraction to expansion, or the reverse. Data on GNP or GDP are only available on an annual basis. As a result, it is not possible to directly determine whether or how long candidate data series lead or lag turning points in economic activity. This renders useless conventional methods of selecting economic indicators as components of the composite index. To circumvent this problem, we applied spectral analysis -- a technique which allows the data to generate a mock cyclical time series -- to the candidate time series. The results were used to determine how closely these indicators mirrored cycles generated on the basis of annual GDP. If the periodicity of the cycles of the candidates were the same as for the overall economy, it qualified as a component of the composite index. Moreover, the periodograms generated also suggested whether the candidate series were leading, lagging, or coincident with movements in real GDP. For example, we found that real oil exports are an excellent leading indicator by two to three quarters (see Figure 3).

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Other steps taken to develop an index of leading indicators for the Indonesian economy include:

- Building the Index. A candidate time series must reflect aggregate economic activity. On this basis seven variables were selected for analysis (see Table 1). Multiple regression analysis was then applied to the candidate time series in order to determine the weights (that is, relative importance) to be assigned to each indicator.
- Testing the Index. The lack of all but annual data on national income and product means that we cannot confirm directly the accuracy of our composite index. In order to test the overall accuracy of the composite index, logit analysis was utilized. Logit analysis is an econometric technique that generates a function of selected time series which "predicts" upturns and downturns in the economy based upon upturns and downturns in the selected economic indicators. This analysis suggests that our composite index is better than 80 percent effective in tracking movements in the economy.

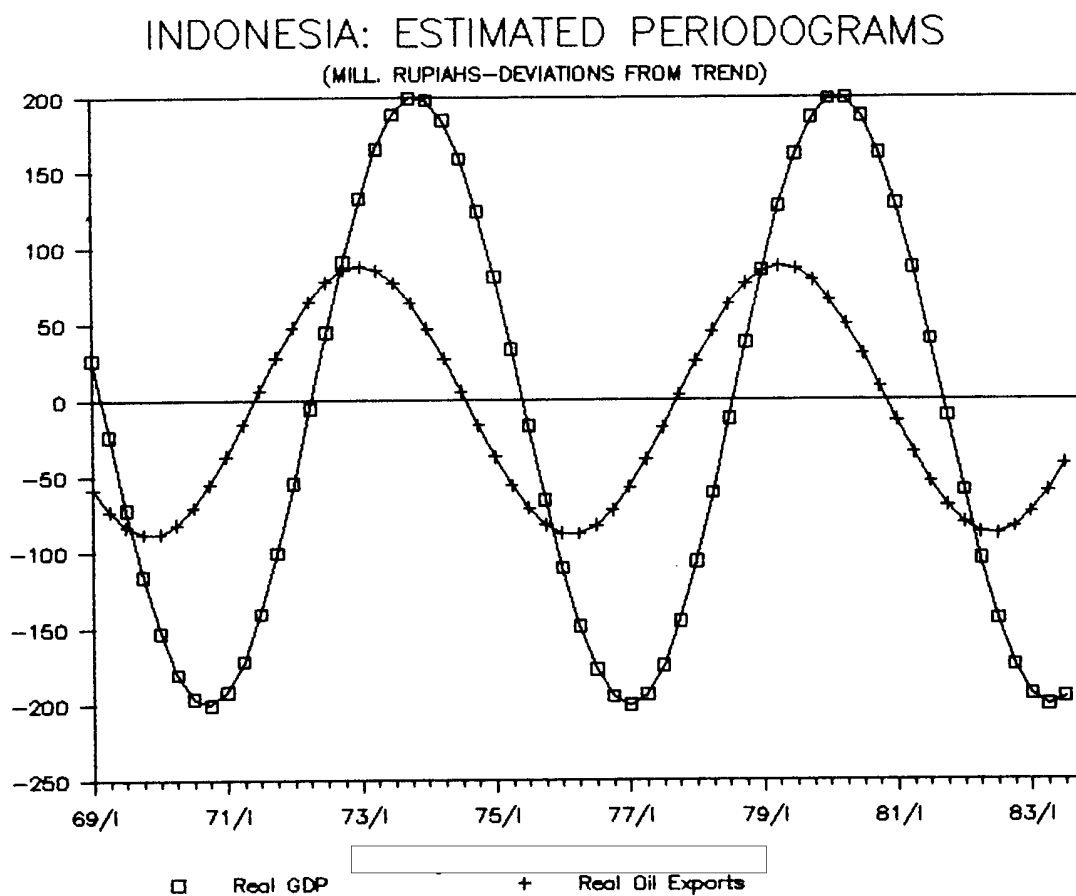
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The index of Indonesian indicators contains several shortcomings. Only a relatively few economic variables are available on a timely basis, and major sectors of the economy -- such as agriculture and nonoil manufacturing -- are not well tracked by any of the indicators. As a consequence, these sectors are not directly captured in the index. This problem is less serious than it might appear, however, since the economy is export driven, and the major export is oil, which is included in the index. In any event, these indicators are probably not responsible for triggering economic turning points.

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FIGURE 3



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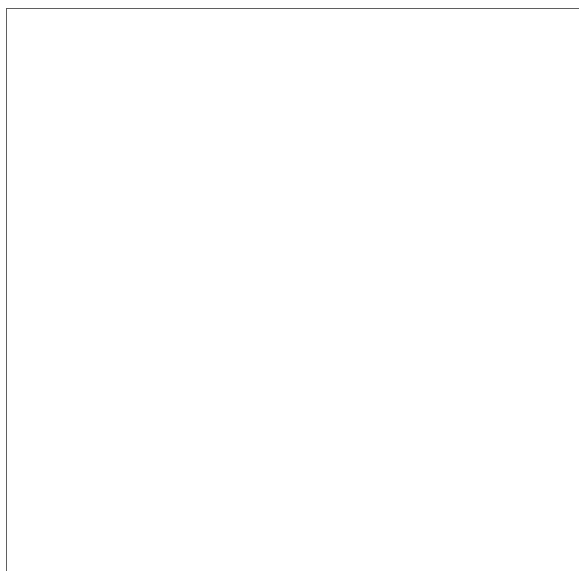
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